

From glowbugs@theporch.com Sat Nov 16 15:42:08 1996  
Return-Path: <glowbugs@theporch.com>  
Received: from uro (localhost.theporch.com [127.0.0.1]) by uro.theporch.com  
(8.8.2/AUX-3.1.1) with SMTP id PAA17099; Sat, 16 Nov 1996 15:37:04 -0600 (CST)  
Date: Sat, 16 Nov 1996 15:37:04 -0600 (CST)  
Message-Id: <199611162137.PAA17099@uro.theporch.com>  
Errors-To: conard@tntech.campus.mci.net  
Reply-To: glowbugs@theporch.com  
Originator: glowbugs@theporch.com  
Sender: glowbugs@theporch.com  
Precedence: bulk  
From: glowbugs@theporch.com  
To: Multiple recipients of list <glowbugs@theporch.com>  
Subject: GLOWBUGS digest 354  
X-Listprocessor-Version: 6.0c -- ListProcessor by Anastasios Kotsikonas  
X-Comment: Please send list server requests to listproc@theporch.com  
Status: 0

#### GLOWBUGS Digest 354

Topics covered in this issue include:

- 1) Re: Crystal Etching and Ammonium Bifluoride, one more point  
by "Brian Carling" <bry@mail1.mnsinc.com>
- 2) Re: Crystal Etching and Ammonium Bifluoride  
by Doug <doug@sunrise.alpinet.net>
- 3) [Fwd: Valves/Tubes Web Page]  
by Conard Murray <conard@tntech.campus.mci.net>
- 4) Re: 6BM8 .jpg file (URL correction  
by john <johnmb@pop.mindspring.com>
- 5) Re: 6BM8 .jpg file  
by "Brian Carling" <bry@mail1.mnsinc.com>
- 6) Re: 6BM8 .jpg file  
by "Brian Carling" <bry@mail1.mnsinc.com>
- 7) Re: Ain't that AES catalog grand!  
by "Robert M. Bratcher Jr." <bratcher@worldnet.att.net>
- 8) Re: Transformers available  
by "Robert M. Bratcher Jr." <bratcher@worldnet.att.net>
- 9) 6BM8 Rig  
by Dave Hutchison <djhutch@concentric.net>
- 10) Re: 6BM8 Rig  
by "Brian Carling" <bry@mail1.mnsinc.com>
- 11) Re: 6BM8 / ECL82 group  
by Bob <KE4QOK@worldnet.att.net>

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Date: Fri, 15 Nov 1996 13:43:56 +0000

From: "Brian Carling" <bry@mail1.mnsinc.com>  
To: lkayser@rideau.net (Larry Kayser), glowbugs@theporch.com  
Subject: Re: Crystal Etching and Ammonium Bifluoride, one more point  
Message-ID: <199611152141.QAA22652@user2.mnsinc.com>

HEY! It's a reply from AF4K!

Larry makes a god point here guys.

I used to work in a crystal factory and here is roughly how the process worked there:

I worked for Cathodeon Crystals in Linton, Cambs. England around 1970 (Gosh that was ONLY 26 years ago!) and stayed there for a few months helping to make the precious rocks for the radio world!

I used to commute over 20 miles each way in a Morris series-Z "Half hundred-weight van" with a 900 c.c. sidevalve engine, that hd a maximum speed of 40 m.p.h. (no tickets) and had to use 40 weight tractor oil in the engine due to leaking oil. The first thing that they showed me was a very immpressive process for pumping air out of the hermetically sealed crystal units, and these were all either HC-6/U size or the little tiny ones that were in vogue in the 70s and 80s. What was cool was that they made SOME HC-6/U size units with aGLASS case! Yes the entire thing was made of clear glass. I don't know who was buying those glass xtals or what they used them for. One could only guess.

The fabrication of crystals at Cathodeon Crystals ran something like this:

Step 1 involved the reciving in of the raw crsytal which as I remember was a man-made rock about 8-10 inches long, perhaps longer and about 1-2" in section.

I think there was a step here that I was less familiar with in which the large raw crystal was attached to a laterally reciprocating machine that ground the top edge perfectly flat using a grinding wheel with a mysterious white fluid tat ran over the wheel all of the time to keep it cool. It took about 5 minutes at a time to run this machine, and the operator sat on a chair watching it, and getting hypnotized by the motion. They would often fall asleep and we had great fun with these folks in the factory! One white haired elderly gentleman with a red bow tie(!) from eastern Europe did this job and he was known to take 40 winks in the afternoons, so we would put a metal pan on the side of the moving table of the machine and it wold eventually fall off making a terrible clatter and wake him up, much to the delight of all of the factory workers nearby!

These raw crystals were then attached to a base plate in a computerized saw after being x-rayed to get the ANGLE of the crystalline structure inside the rock. They were then lined up on the base plate in the saw, a carbide-edged rotary blade came down onto the rock and sliced it up like sliced bread! The individual slices were then measured with a micrometer to make sure that they were the right thickness that was needed for the order. They were also x-rayed once again and the angle to the nearest 1/100th of a degree was recorded on the paperwork that travelled with the batch of crystals.

The next step was a lot of fun. They would take the crystal blanks and put them in a device called a "lapping machine" - which had a set of cog-like wheels that ran around inside two concentric circular gears, the outer one rotating. These smaller cogs each had six holes in them that could hold the crystals. The cogs came in many different thicknesses depending on the desired final thickness and the beginning thickness of the blanks. Once the crystals were in place, they would be run FIRST in a slurry of thick grease that contained an abrasive component. The operators had charts for how many minutes to run them for a desired shift in thickness. The COARSE adjustment was made first, and you could soon make a large difference in those jewels! Operators were given a target thickness. Typically about 60 blanks would be whirring around in the lapping machine at any given time of the day. They had a number of these machines and they ran all day long. The final step in the lapping process was a set of specialized lapping machines that were connected to the ANTENNA TERMINALS of some EDDYSTONE receivers! As they turned inside the machine, the grinding process would set up enough vibration of the crystals that it generated NOISE In the receivers and you could HEAR the crystals as the frequency shifted. Of course they would not ALL be at the exact same frequency so you got a kind of wideband noise!

At several steps along the way, things could go wrong! The lapping machines would sometimes go "UP!" That means it would all fly apart and you had a mess of crstals and nasty grease everywhere and had to pick your way through it all and start over.

Another problem was with "outliers" - some of the crystal blanks would wind up being too far off from their target thickness at the early stages or too far off frequency near the end. Often these ones had to be tossed out. Anyone here live near a crystal factory?? he he!!

After that the FINAL fine tuning was done by spraying GOLD onto the crystals, and that is how this plant did their electrode attachment. They put gold on the corner of each side of the blank for an electrical connection, and if they needed to lower the frequency a tad, they just added a little bit more gold. Then the wirs were soldered on, the whole thing was mounted in a holder & hermetically

sealed with the vacuum pump machine and out they went!

I enjoyed working there. It was a lot of fun. I met a lot of neat people, especially the girls! But that was long ago..

On 15 Nov 96, Larry Kayser wrote:

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> Greetings:  
>  
> I have a small point to add on the issue of using hydrofluoric acid  
> in the etching of quartz crystals blanks. The first point is to  
> that extensive etching to move a long way as Barry suggest is  
> inappropriate. He adds that the acid attacks the edges with vigour,  
> intuitively I can agree but I had never recognized this fact, there  
> is however another problem. The acid does not seem to uniformly  
> etch the surface of the crystal.  
>  
> My experience is that the remaining blank, after etching, may have  
> up to a 1/1000 of an inch bias in thickness with just moving in the  
> order of 5 khz or so. I have one sense of the cause of this problem  
> might be the need to agitate the crystal in the etchant. My work  
> has not solved this problem...  
>  
>  
> Larry  
> va3lk / wa3zia  
>  
>  
*****  
*** 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA *  
** E-mail to: bry@mnsinc.com *  
*** See the great ham radio resources at: *  
** http://www.mnsinc.com/bry/ *  
*****
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Date: Fri, 15 Nov 1996 18:13:30 -0700  
From: Doug <doug@sunrise.alpinet.net>  
To: glowbugs@theporch.com  
Subject: Re: Crystal Etching and Ammonium Bifluoride  
Message-ID: <328D153A.55B7@alpinet.net>

Hi Barry...I sure have enjoyed your information on the "Flourides"... truly informative. Now, not being involved in Chemistry, I'd like to offer what we did in the (distant?) past. After grinding rocks, hoping to hit the freq dead on...which almost never happened, we dipped the crystal blank in Carbon Tetrachloride that we borrowed from an old fire

extinguisher. I'm not even sure Carbon Tet is even available any more, but we sure used bunches of it to clean relay contacts in the Telephone Company. When we phased it out due to it's nasty habit of showing up in one's digestive organs, we went to Trichlorethane, which was supposed to be less dangerous. Would it be better to grind (or safer anyhow) and then degrease the blanks with Trichlor?

I can see a feller might want to construct a small oscillator for test of these little crystals...something cheap and dirty just to see if you are getting close to freq...hmmmm, a project in the making.

Take Care,

Doug Dunn, K7YD  
Livingston, MT

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Date: Sat, 16 Nov 1996 02:38:54 -0600  
From: Conard Murray <conard@tnitech.campus.mci.net>  
To: glowbugs@theporch.com  
Subject: [Fwd: Valves/Tubes Web Page]  
Message-ID: <328D7D9E.469F@tnitech.campus.mci.net>

This is a multi-part message in MIME format.

-----25A454E37012  
Content-Type: text/plain; charset=us-ascii  
Content-Transfer-Encoding: 7bit

Hello fellow filament fanatics!  
This site looks promising.  
73 de Conard, ws4s

-----25A454E37012  
Content-Type: message/news  
Content-Transfer-Encoding: 7bit  
Content-Disposition: inline

Path: news.campus.mci.net!news-out.internetmci.com!InternetMCI.com!panix!  
feed1.news.erols.com!howland.erols.net!surfnet.nl!news.unisource.nl!xs4all!xs4all!  
tgale  
From: tgale@xs4all.nl ()  
Newsgroups: rec.antiques.radio+phono  
Subject: Valves/Tubes Web Page  
Date: 14 Nov 1996 17:36:32 GMT  
Organization: XS4ALL, networking for the masses  
Message-ID: <56f1b0\$aqt@news.xs4all.nl>

NNTP-Posting-Host: xs2.xs4all.nl  
X-XS4ALL-Date: Thu, 14 Nov 1996 18:36:32 MET  
Summary: data resource  
Keywords: valves tubes  
X-Newsreader: NN version 6.5.0 #4

Good-day fellow radio enthusiasts. This is just a quick note to let you know that I have started to set up a Web page with some valve/tube information which I hope will be of help to those interested in restoring, repairing or using valve/tube - based equipment. I have had a few positive reactions to my first effort, but of course I welcome any good suggestions and constructive criticism in order to improve the page, which I started following a reply I was able to post to someone elses posted query.

The page should be accessible at: <<http://www.xs4all.nl/~tgale/valves.html>>

I find that most discussion in respect of this subject can be found on the newsgroup <news:rec.antiques.radio+phono> but I thought I would post this note to a couple of other groups where people might be interested as well.

Regards, and 73's, F.C. Trevor Gale, G8GFH (resident in The Netherlands).

-----25A454E37012--

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Date: Sat, 16 Nov 1996 07:51:20 -0500 (EST)  
From: john <johnmb@pop.mindspring.com>  
To: lee@radioadv.com, glowbugs@theporch.com  
Subject: Re: 6BM8 .jpg file (URL correction)  
Message-ID: <199611161251.HAA04888@itchy.mindspring.com>

At 03:26 PM 11/15/96 -0600, you wrote:  
>Hello gang,  
>  
>I finally got around to posting a .jpg file of the 6BM8 rig I've been  
>working on. It will be found at <http://cosmosbbs.com/rac.jpg>

That was ALMOST right!

It's actually at: <http://www.cosmosbbs.com/rac.jpg>

Best 73  
/john

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+-----+
| John Brewer johnmb@mindspring.com |
| WB5OAU/4          AMI #24      |
| Vintage Gear web page: http://www.mindspring.com/~johnmb/|
+-----+
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Date: Sat, 16 Nov 1996 05:19:44 +0000  
From: "Brian Carling" <bry@mail1.mnsinc.com>  
To: lee@radioadv.com (Lee Richey)  
Subject: Re: 6BM8 .jpg file  
Message-ID: <199611161316.IAA25263@user2.mnsinc.com>

HEY! It's a reply from AF4K!

GREAT - now how about posting the schematic too?  
That way a few more of us could build one too...  
I think there are three of us out here that want to build basically  
the same rig, OR a 6U8 version of it.

On 15 Nov 96, Lee Richey wrote:

```
> Hello gang,  
>  
> I finally got around to posting a .jpg file of the 6BM8 rig I've  
> been working on. It will be found at  
> http://cosmosbbs.com/rac.jpg  
>  
> It is about 225k or so, so it will take a few minutes to down load.  
>  
> The rig is built on a 5 x 7 pc board which mounts on the open side  
> (bottom) of a 5 x 7 chassis.  
>  
> The switches across the front of the pc board left to right are:  
>  
> Power  
> Spot (momentary)  
> Xtal select  
> Band (80/40)  
>  
> The four trimmers are plate tune and load for 80 and 40 meters. The  
> key jack is behind the 6BM8 and the rf jack is visible to the right  
> of the key jack. Notice the small pilot lamp to the left and near
```

> the base of the power transformer. It is used as a "plate meter".  
> I use a 2 volt/60ma lamp. Works very nicely. I expect to mount it  
> from the underside of the pc board somewhere between the spot switch  
> and the transformer. The power line cord exits behind the power  
> transformer through the pc board. The end result is that, except  
> for mounting holes, no holes are needed in the chassis.  
>  
> There are no high voltage AC/DC/RF points exposed.  
>  
> I am going to post a picture of the rig at K3RAC (club station)  
> soon. It will show the 6BM8 rig next to the SX-122 and T/R keyer I  
> use. The file will be same site with file name of k3rac.jpg.  
>  
>  
> -Lee- -WA3FIY-  
>  
> <http://www.radioadv.com>  
>  
\*\*\*\*\*  
\*\*\* 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA \*  
\*\* E-mail to: bry@mnsinc.com \*  
\*\*\* See the great ham radio resources at: \*  
\*\* <http://www.mnsinc.com/bry/> \*  
\*\*\*\*\*

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Date: Sat, 16 Nov 1996 07:03:30 +0000  
From: "Brian Carling" <bry@mail1.mnsinc.com>  
To: john <johnmb@pop.mindspring.com>  
Subject: Re: 6BM8 .jpg file  
Message-ID: <199611161500.KAA29144@user2.mnsinc.com>

HEY! It's a reply from AF4K!

On 16 Nov 96, john wrote:

> At 03:26 PM 11/15/96 -0600, you wrote:  
> >Hello gang,  
> >  
> >I finally got around to posting a .jpg file of the 6BM8 rig I've  
> >been working on. It will be found at  
> ><http://cosmosbbs.com/rac.jpg>

John - I have to say that is a GREAT looking little rig!  
Is the top surface made of copper? PCB material or what?  
You were smart to use small slider switches and small trimmer caps  
to economize on space! Great innovative design. This photo file being  
on the web ought to stimulate the rest of us that are interested in

constructing an ECL82 TX into action!

Bravo & 72.5 de G3XLQ / AF4K

Bry

\*\*\*\*\*  
\*\*\* 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA \*  
\*\* E-mail to: bry@mnsinc.com \*  
\*\*\* See the great ham radio resources at: \*  
\*\* http://www.mnsinc.com/bry/ \*  
\*\*\*\*\*

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Date: Sat, 16 Nov 1996 10:01:19 -0600  
From: "Robert M. Bratcher Jr." <bratcher@worldnet.att.net>  
To: glowbugs@theporch.com  
Subject: Re: Ain't that AES catalog grand!  
Message-ID: <1.5.4.32.19961116160119.006bb3b8@postoffice.worldnet.att.net>

At 12:31 PM 11/12/96 +0000, you wrote:

>  
>Hi gang,  
>  
>Just got my very first AES catalog (learned about it here  
>in the group). Wowsers, what a neat thing it is!  
>  
>Anyone here not having it should. Call them at 1-800-820-5411  
>if you don't already have a copy. VERY good deals on  
>our kinda stuff.  
>  
>  
>Dave  
>  
>

I've kept all my AES catalogs for the last 7 years! They are interesting...

Robert M. Bratcher Jr.  
E-mail to:  
bratcher@worldnet.att.net  
Record collector, 8mm, super 8, 16 and 35mm Film collector.  
I like old radio's too.  
Collins, Hallicrafters, National & Hammurland are my Favorites!

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Date: Sat, 16 Nov 1996 10:01:26 -0600

From: "Robert M. Bratcher Jr." <bratcher@worldnet.att.net>  
To: glowbugs@theporch.com  
Subject: Re: Transformers available  
Message-ID: <1.5.4.32.19961116160126.006bfef0@postoffice.worldnet.att.net>

At 04:20 PM 11/13/96 +0000, you wrote:  
>Oh Man!! You guys really hit a nerve with me on that one!!!!  
>  
>re>>An idea .... wind a hellatiously large coil under/over/beside the street  
>>in front of your house. Wait for one of those goobers with the KW  
>>bass-thumper earthquake-producing hear-it-at-a-mile audio systems to  
>>drive by and let him have it with a 3500Hz tone. You might remagnetize  
>>his speakers too.  
>  
>I've been wanting to try that for years! Those goobers really tick me  
>off!! I wonder if you could build a mobile unit for use in traffic!!  
>  
>  
>73.....Glenn N2BJG gfiner@nms.com

I my area (Houston) it seems to be young blacks with that loud boomy bass. They put 10 or 12 inch woofers in the back with part in the trunk. Sure I like heavy bass too with my oldies R&R but mine doesn't boom like others do. But then I've got one of those woofer boxes in my Chevy S-10 PU as part of the stereo system. Sounds great when cranked up but not boomy at all. I don't play it loud all the time just during favorite songs.

Robert M. Bratcher Jr.  
E-mail to:  
bratcher@worldnet.att.net  
Record collector, 8mm, super 8, 16 and 35mm Film collector.  
I like old radio's too.  
Collins, Hallicrafters, National & Hammurland are my Favorites!

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Date: Sat, 16 Nov 1996 12:31:04 -0500  
From: Dave Hutchison <djhutch@concentric.net>  
To: glowbugs@theporch.com  
Subject: 6BM8 Rig  
Message-ID: <328DFA58.7C59@concentric.net>

I tried bringing up the jpg file listed in several e mails recently but nothing was there...

Is there another e mail address other than [www.cosmosbbs.com/rac.jpg](http://www.cosmosbbs.com/rac.jpg)?

73's

Dave Hutchison KW9U

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Date: Sat, 16 Nov 1996 10:34:03 +0000  
From: "Brian Carling" <bry@mail1.mnsinc.com>  
To: djhutch@concentric.net, glowbugs@theporch.com  
Subject: Re: 6BM8 Rig  
Message-ID: <199611161831.NAA05729@user2.mnsinc.com>

HEY! It's a reply from Bry, AF4K!

Hello there Dave. Well I got it ok!  
Be SURE you are typing the address in correctly:  
<http://www.cosmosbbs.com/rac.jpg>

I dunno what else to tell ya! It's a beauty! He really did a fine construction job.

Are you interested in building one yourself?

On 16 Nov 96, Dave Hutchison wrote:

> I tried bringing up the jpg file listed in several e mails recently  
> but nothing was there...  
>  
> Is there another e mail address other than  
> [www.cosmosbbs.com/rac.jpg](http://www.cosmosbbs.com/rac.jpg)?  
>  
> 73's  
>  
> Dave Hutchison KW9U  
>  
\*\*\*\*\*  
\*\*\* 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA \*  
\*\* E-mail to: bry@mnsinc.com \*  
\*\*\* See the great ham radio resources at: \*  
\*\* <http://www.mnsinc.com/bry/> \*  
\*\*\*\*\*

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Date: Sat, 16 Nov 1996 19:11:04 +0000  
From: Bob <KE4QOK@worldnet.att.net>  
To: glowbugs@theporch.com  
Subject: Re: 6BM8 / ECL82 group

Message-ID: <19961116191102.AAA28710@LOCALNAME>

OK here Brian. I got the JPEG and it look real nice. Is the schematic available electronically??

>Will you please drop me a reply a.s.a.p. and let me know that you got  
>this, and address your reply to the whole group. That way we will all  
>know that it is working!

73  
KE4QOK  
Bob  
136 Hermitage Rd.  
Newport News, Va. 23606

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End of GLOWBUGS Digest 354  
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